UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,907	03/15/2004	Rina Panigrahy	47380	3071

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EXAMINER
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ART UNIT	PAPER NUMBER
2163	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/801,907	PANIGRAHY ET AL.
	Examiner	Art Unit	
	Angela M. Lie	2163	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6, 24 and 25* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 24 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2.   The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act

of 1999 (AIPA) and the Intellectual Property and High Technology Technical

Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior

to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3.   **Claims 1-6, 24 and 25 are rejected under 35 U.S.C. 102(e) as being**

anticipated by Eatherton et al (US Patent No. 6560610).

    As to claims 1, 3, 5, 6 and 24, Eatherton discloses an apparatus and a method

for determining a longest matching prefix, comprising: an external memory (Figure 9,

element 710) for storing one or more non-first-level tiny trees (Figure 9, levels 17-24);

and an applications specific integrated circuit (ASIC) including a lookup engine (Figure

9, element 702) and internal memory (Figure 9, element 708) for storing a set of first-

level tiny trees (Figure 9, levels 0-8), the ASIC configured to perform operations, the

operations including: determining which particular first-level tiny tree of a plurality of first-level tiny trees to search based on a lookup value (column 2, lines 21-29, wherein the lookup value corresponds to target string); retrieving a first-level root node of the particular first-level tiny tree from the internal memory (Figure 3, root array), the first level root node including a first-level plurality of keys (Figure 1, prefix database, wherein each node i.e. P1, P2 etc correspond to a certain prefix i.e. *, 1* respectively) defining a plurality of tiny intervals, wherein a tiny intervals, wherein a tiny interval is a range defined by two consecutive keys (wherein P1 includes tiny intervals i.e. 000001-000011, etc, since P1 (root node) represents all the possible prefixes, it also represents intervals bounded by two consecutive keys, wherein keys represent actual prefixes, son other words the root comprises plurality of tiny intervals); traversing the particular first-level tiny tree stored in the internal memory to identify a next-level tiny tree (column 2, lines 30-36, wherein traversing corresponds to taking branches left or right), the traversing the particular first-level tiny tree including comparing the lookup value with one or more of the first-level plurality of keys (column 12, lines 12-15, wherein bits in a current stride representing certain node are considered to be keys with which the target string is matched) defining a plurality of tiny intervals, wherein the first-level tiny tree and the next-level tiny tree are independent trees (Figure 9, for instance level 1 and level 17 reside on two separate memories); retrieving a root node of the next-level tiny tree stored in the external memory (column 3, lines 34-37, wherein search might require going to the lower levels of the tree and if it reaches level 17, the external memory has to be accessed), the root node including a plurality of keys, defining a plurality of tiny

intervals (wherein consecutive keys (actual prefixes) form tiny intervals) to compare

with the lookup value and a back value to identify a matching prefix should no matching

prefix be identified within the particular tree (Figure 3, for instance level 2 comprises 3

root nodes (for each subtree), and each of those nodes comprises the prefix (key)

representing it (Figure 1, prefix database)); traversing the particular next-level tiny tree

stored in the external memory to either identify a matching prefix or a no match

condition, the traversing the particular next-level tiny tree including comparing the

lookup value with one or more of the plurality of keys (column 12, lines 12-15, wherein

bits in a current stride representing certain node are considered to be keys with which

the target string is matched); and identifying as the longest matching prefix identified

based on the back value if the traversing resulted in the no match condition else the

matching prefix (column 8, lines 17-22, wherein the target string is matched as far as

possible, the algorithm traverses the tree, and if it is determined that there is no better

match than the previous one, the most recent result is used).

As to claim 2, Eatherton discloses the apparatus comprising an associative

memory, wherein the determining which particular first-level tiny tree of a plurality of

first-level tiny trees to search based on a lookup value includes performing a lookup

operation on the associative memory on based on the lookup value (column 2, lines 49-

58, wherein the value has to be compared to the respective root nodes, in order to

decide the correct path finding the longest matching prefix).

As to claims 4 and 25, Eatherton discloses the apparatus wherein the first level

tiny tree is associated with no back value (Figure 1, wherein first level comprises 1*

which could not have the back·value, furthermore levels 0 and 1 are the root nodes of

the tree which is completely independent from other data tree).

Response to Arguments

4.   **Applicant's arguments filed 11/13/2007 have been fully considered but they**

are not persuasive.

5.   The rejection under 35 U.S.C 101 is withdrawn, as it appears to be consistent

with current 101 requirements.

6.   With respect to the Applicant's assertion on page 8, wherein the Applicant

alleges that the Prior Art on record does not teach keys defining tiny intervals, which are

ranges identified by two consecutive keys, the Examiner disagrees. As explained in the

rejection above, for instance root node, comprises any prefix as it represents the

broadest set of available prefixes. If each prefix corresponds to a key, and those

prefixes/keys are arranged from the "smallest" (i.e. 000001) to the "largest" (i.e. 111111)

then all those intermediate keys form a plurality of tiny intervals. Hence the prior

teaches "a first-level root node including a first-level plurality of keys defining a plurality

of tiny intervals, wherein a tiny interval is a range defined by two consecutive keys".

The Prior Art

7.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

- Rhoades (US Publication No. 2005/0242976) discloses a lookup engine comprising a value and associated key value, so that outputting a value that is associated with the stored key value, which matches an input key value, carries out the lookup.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9.   A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. Lie whose telephone number is 571-272-8445. The examiner can normally be reached on M-F.

11.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

12.   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Angela M Lie

WILSON LEE
PRIMARY EXAMINER